LISTING OF THE CLAIMS

This listing of claims will replace all prior versions and listings of the claims in this application:

1. (Currently amended) A method of obtaining coarse synchronization in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network, the method comprising:

tuning a first receiver to a fixed first frequency out of a plurality of frequencies used in the data link network;

observing signal strength of signals received on the fixed first frequency during a sample time period;

collecting samples during the sample time period over a plurality of samples on the fixed first frequency to obtain a sample energy pattern;

applying a threshold to the sample energy pattern;

obtaining a received energy pattern by utilizing a fraction of energy components in the sample energy pattern that exceed the threshold;

determining an expected energy pattern on the fixed first frequency corresponding to a time uncertainty window, the expected energy pattern being based upon a known hopping pattern;

comparing the ~~sample~~ received energy pattern to a first portion of the expected energy pattern on the fixed first frequency, the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window; and

determining whether the first time period is a coarse synchronization candidate as a function of the comparison between the ~~sample~~ received energy pattern and the first portion of the expected energy pattern.

2. (Cancelled)

3. (Original) The method of claim 1, wherein the first time period corresponds to a first plurality of time slots used in the data link network and which fall within the time uncertainty window, and wherein determining the expected energy pattern further comprises determining the first portion of the expected energy pattern based upon an expected hopping pattern for the first plurality of time slots.

4. (Original) The method of claim 3, wherein the sample period has a duration which is substantially equal to the first time period which falls within the time uncertainty window.

5. (Currently amended) The method of claim 1, wherein determining whether the first time period is a coarse synchronization candidate further comprises determining whether the ~~sample~~ received energy pattern and the first portion of the expected energy pattern are substantially a match.

6. (Currently amended) The method of claim 1, and if the first time period is determined to not be a coarse synchronization candidate, then further comprising:

comparing the ~~sample~~ received energy pattern to a next portion of the expected energy pattern, the next portion of the expected energy pattern corresponding to a next time period within the time uncertainty window; and

determining whether the next time period is a coarse synchronization candidate as a function of the comparison between the ~~sample~~ received energy pattern and the next portion of the expected energy pattern.

6 7. (Currently amended) The method of claim 5, and further comprising sequentially repeating, for subsequent time periods within the time uncertainty window until a coarse synchronization candidate is found, the step of comparing the ~~sample~~ received energy pattern to the next portion of the expected energy pattern, and the step of determining whether the next time period is a coarse synchronization candidate as a function of the comparison.

7 8. (Currently amended) The method of claim 6, and after a coarse synchronization candidate is found, then further comprising:

tuning the first receiver to a fixed second frequency out of the plurality of frequencies used in the data link network;

observing signal strength of signals received on the fixed second frequency during a second sample time period;

collecting samples during the second sample time period over a plurality of samples on the fixed second frequency to obtain a second sample energy pattern;

applying a threshold to the second sample energy pattern;

obtaining a second received energy pattern by utilizing a fraction of energy components in the second sample energy pattern that exceed the threshold;

determining a second expected energy pattern during a time period corresponding to the second sample time period, using the coarse synchronization candidate as a reference time, based upon the known hopping pattern;

comparing the second ~~sample~~ received energy pattern to the second expected energy pattern corresponding to the second sample time period; and

verifying the accuracy of the coarse synchronization candidate based upon the comparison between the second ~~sample~~ received energy pattern and the expected energy pattern.

8. (Currently amended) The method of claim 1, and further comprising:

tuning each of a plurality of other receivers to different one of a plurality of other fixed frequencies used in the data link network;

observing signal strength of signals received on each of the plurality of other fixed frequencies during the sample time period;

collecting samples during the sample time period over a plurality of samples on the plurality of fixed frequencies to obtain a plurality of other sample energy patterns;

applying the threshold to the plurality of other sample energy patterns;

obtaining a plurality of other received energy patterns by utilizing a fraction of energy components from the plurality of sample energy patterns that exceed the threshold;

determining a plurality of other expected energy patterns corresponding to the time uncertainty window, each of the plurality of other expected energy patterns being based upon a known hopping pattern and upon a corresponding one of the plurality of other fixed frequencies;

comparing each of the plurality of other ~~sample~~ received energy patterns to a first portion of the corresponding one of the plurality of other expected energy patterns, the first portion of each of the plurality of other expected energy patterns corresponding to a time period within the time uncertainty window; and

determining whether the time period within the time uncertainty window is a coarse synchronization candidate as a function of the comparisons.

9/16. (Currently amended) A radio for use in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network, the radio comprising:

a first receiver adapted to be tuned to a fixed first frequency out of a plurality of frequencies used in the data link network;

signal strength determining circuitry adapted to observe signal strength of signals received on the fixed first frequency during a sample time period;

processing circuitry coupled to the signal strength determining circuitry and adapted to determine a sample energy pattern on the fixed first frequency in response to the observations by the signal strength determining circuitry, the processing circuitry being further adapted to apply a threshold to the sample energy pattern to and to determine a received energy pattern by utilizing energy components in the sample energy pattern that exceed the threshold, the processing circuitry being further adapted to determine an expected energy pattern corresponding to a time uncertainty window, the expected energy pattern being based upon a known hopping pattern, the processing circuitry being adapted to compare the ~~sample~~ received energy pattern to a first portion of the expected energy pattern, the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window, the processing circuitry further

being adapted to determine as a function of the comparison whether the first time period is a coarse synchronization candidate.

11. (Cancelled)

12. (Previously amended) The radio of claim 10, wherein the first time period correspond to a first plurality of time slots used in the data link network and which fall within the time uncertainty window.

13. (Original) The radio of claim 12, wherein the sample period has a duration which is substantially equal to the first time period.

14. (Currently amended) The radio of claim 10, wherein if the first time period is determined to not be a synchronization candidate, then the processing circuitry is further adapted to compare the ~~sample~~ received energy pattern to a next portion of the expected energy pattern, the next portion of the expected energy pattern corresponding to a next time period within the time uncertainty window, and wherein the processing circuitry is adapted to determine whether the next time period is a coarse synchronization candidate as function of the comparison between the ~~sample~~ received energy pattern and the next portion of expected energy pattern.

15. (Currently amended) An apparatus for obtaining coarse synchronization in a frequency hopped/direct sequence spread spectrum (FH/DSS) time division multiple access (TDMA) data link network, the apparatus comprising:

means for tuning a first receiver to a fixed first frequency out of a plurality of frequencies used in the data link network;

means for observing signal strength of signals received on the fixed first frequency during a sample time period to obtain a sample energy pattern;

the means for applying a threshold to the sample energy pattern and to determine a received energy pattern by utilizing energy components from the sample energy pattern that exceed the threshold;

means for determining an expected energy pattern on the fixed first frequency corresponding to a time uncertainty window, the expected energy pattern being based upon a known hopping pattern;

means for comparing the ~~sample~~ received energy pattern to a first portion of the expected energy pattern, the first portion of the expected energy pattern corresponding to a first time period within the time uncertainty window; and

means for determining whether the first time period is a coarse synchronization candidate as a function of the comparison between the ~~sample~~ received energy pattern and the first portion of the expected energy pattern.